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# USSR Report

TRANSPORTATION

No. 46



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AIR

#### BRIEFS

HELSINKI REPORTS NEW AIR ROUTE--Air communications between Tampere and Leningrad will be inaugurated on Saturday [4 April]. The first trip will be flown by a Finnair DC-9. On Sunday one of Aeroflot's Tupolevs will fly in the opposite direction from Leningrad to Tampere. Initially the route will only be open at weekends. On the first flight from Leningrad to Tampere there will be a Soviet delegation representing the airline and tourist industries. Finnair spokesmen pointed out that the new route will serve a much greater area than Tampere and its immediate surroundings. For the Leningrad route there are good connections between Tampere and Kuopio Airport in eastern Finland and with Turku and Stockholm. From Leningrad it is easy to continue by air to the tourist resorts on the Black Sea, Finnair pointed out. [Text] [LDO71509 Helsinki HUFVUDSTADSBLADET in Swedish 4 Apr 81 p 11]

CSO: 3109/183

## RAILROAD

### BAM PROGRESS REPORT

Moscow EKONOMICHESKAYA GAZETA in Russian No 8, Feb 81 p 17

[Article by BAM [Baykal-Amur Main Line] correspondent A. Krivoy: "Eastward from the Baykal"]

[Text] On the eve of the 1981 new year the rails of the large BAM of the western sector reached the 404th kilometer of the line. This point is station Kichera of the Buryat section of BAM, which section was installed in the taiga three years ago by the members of the Komsomol shock detachment imeni 18 S"yezda VLKSM. Now the collective of Komsomol youth train No 608 of the Nizhneangarsktransstroy [Nizhneangarsk Transport Construction Trust] will take the rails further east toward the settlement of Novyy Uoyan.

Reaching station Novyy Uoyan requires the laying of 116 more kilometers of track. On the path of the builders are the sidings of Dzelinda, Kiron and Ordynka, the swift taiga streams, and the deep waters of the Upper Angara. Since the beginning of the new year on the key Kichera-Novyy Uoyan stretch a stepped-up pace of work has been maintained by the bridge construction workers of Mostostroy [Bridge Construction Trust]-9, the machine operators of the Zapbastroymekhanizatsiya [West BAM Construction Mechanization Trust], and the subdivisions of the general contractor--the Nizhneangarsktransstroy.

Among other mechanized columns [MK] of Zapbastroymekhanizatsiya the collective of MK-138 is working on this stretch at a shock labor pace. It was the first to settle in the area of the Upper Angara and in the ensuing years it built its own settlement and production base and did a great deal of work on the route. Through the taiga and the swamps it built a route motor road to the country's longest tunnel--the 15-kilometer North Muya, now under construction. The work of this collective was responsible for the laying of the railroad bed on the three stretches of the Buryat section of BAM, along which they have opened operational train traffic. The machine operators completed the work on the 10th Five-Year Plan eight months ahead of schedule and the assignments for the final year a month ahead of the time limit.

This year the MK-138 is to turn over 49 kilometers of excavated roadbed for the laying of tracks. Not one BAM mechanized column has had to fulfill a work volume of such magnitude. The collective is ready to exert every effort and does not intend to give up before it has gained these positions. Great importance in this

regard is attached to the introduction of the brigade method. Practically all the collectives doing the basic construction are using this method in their work. The brigades operating on a cost accounting basis are achieving high production indicators.

Step by step the transport construction workers are moving ever further eastward from the Baykal. Their task is to reach Novyy Uoyan with rails by the end of the year.

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CSO: 1829/203

## RAILROAD

### AZERBAIJAN USES LONGER, HEAVIER TRAINS

Baku BAKINSKIY RABOCHIY in Russian 9 Jan 81 p 1

[Article by M. Babayev, chief of locomotive service of the Azerbaijan Railroad, Baku: "Progressive Work for All--The Levels of Initiative"]

[Excerpts] The efforts of the railroad workers of the Moscow line have met with a warm response in the collectives of the enterprises.

Suffice it to say that last year the locomotive crews operated about 40 percent of the trains (of the total number) as heavyweight trains and in them they transported millions of tons of above-norm national economy freight.

Every day from March to June on the railroad we included in the traffic schedule (by way of an experiment) 3-4 liquid-freight trains weighing 4,500 tons (as opposed to a norm of 3,200 tons). These trains were formed in Akhmedli, proceeded with the locomotives as far as Imishli, and from there continued to Norashen on dual diesel locomotive traction. The experiment was successful; every day five-six additional cars were made available and the traffic schedule was less overburdened. Now we are giving a great deal of thought to the idea of organizing regular movement of trains of increased weight in the aforementioned sectors.

Since mid-1980 we have begun to operate trains which are 300 tons in excess of the weight norms in the Baladzhary-Akstafa sector; this too is yielding very substantial results. In addition, from the Oktyab'r Railroad we invited specialists, who visited us in August in a dynamometric railroad car. They traveled through a number of sectors and confirmed the fact that we have the capability of operating on some lines trains weighing up to 3,500 tons as well as double trains of empty cars.

And on the eve of the year 1981 dual trains were in operation in the Baladzhary-Samur sector. This made possible a saving in five days of 14 electric locomotives and the dispatch of 700 additional cars. The railroad traffic commanders have also taken over control of the other trains which are bound for delivery to the Samur junction.



## RAILROAD

### LOCOMOTIVE PARK DIFFICULTIES SCORED

Moscow GUDOK in Russian 17 Mar 81 p 2

[Commentary by Candidate of Technical Sciences Yu. Tikhonov, senior scientific associate of the VNIIZhT [All-Union Scientific Research Institute of Railroad Transportation], Moscow

[Text] One of the truly worst "bottlenecks" in the recent work of the steel lines has been the locomotive operation. For example, the technical status of the diesel locomotives is currently on the level of the 1950's. And as a rule, as Comrade Arapov emphasizes, the chief cause lies in the errors in the make-up of the repair base.

Unfortunately, in the period of restoration of the taiga, in railroad transport there was no fundamental remodeling of the locomotive repair base for the maintenance of locomotives; it was adapted for the reconditioning of modern electric and diesel locomotives. The technical equipment for it was considerably short of the requirements. Despite the fact that the process of improvement of the repair facilities was accompanied by specialization of the enterprises, the introduction of the large-unit method which made possible a sharp reduction of the downtime of the locomotives in repair, and the use of the methods of network planning and management and scientific organization of labor--despite these, for the network of railroads as a whole the inadequacy of the repair base did not improve but, on the contrary, intensified. For example, there is no place to do TR-3 current repair for 4,000 sections of diesel locomotives. The transport plants are not meeting the yearly requirements of the railroads for capital and medium repair of 2,000 diesel locomotives, 500 electric locomotives, and 200 electric sections.

The situation with respect to the technical status of the locomotives, particularly the diesel locomotives, is aggravated even more by the fact that the production capacities of the plants enable them to provide only 85 percent of the spare parts needed by the depots; and in capital reconditioning of the most important equipment only 70 percent of the facilities necessary for organization of the large-unit method of repair.

Thus arises the deficiency. It is felt with particular acuity in regard to the diesels, the traction generators and engines, the turbocompressors, the storage batteries, the reducing gear, and the auxiliary electric machines. If we compute

what the service life of some of the units would be on the basis of the level of the deliveries, we would come up with 200 years!

Thus, the worry about maintaining the locomotive fleet in operating condition within the entire service life has devolved wholly and fully on the operational crews. More than 100 depots on the network are doing TR-3 of the diesel locomotives. The successful implementation of the progressive and effective large-unit method requires that such shops have cranes with a lifting capacity of 30 tons for the change of diesel generators. But only one-third of the specialized shops are equipped with such cranes.

Comrade Arapov, the chief of the technical division of the line from Uzlovaya has suggested a way out of the situation. But it's a temporary measure. In my opinion, we can avoid all these losses by organizing the so-called "firm-type of repair," wherein the manufacturing plant assumes the responsibility not only for the production of the spare parts but also for the capital reconditioning of the equipment it produces. This method is in widespread use not only with foreign firms but also with domestic ones which manufacture, for example, tractors and trucks.

In this latter instance the engineer-technical services of the locomotive-building plants will obtain pertinent and objective information on the technical condition of the locomotive parts, units and assemblies during the entire period of their service and not just in the guarantee period. And this will help to step up the level of their reliability.

The "Basic Directions" makes reference to the need for more extensive use of special-purpose comprehensive programs for resolving the scientific-technical, economic and social problems among the interrelated industries. It seems to me that the problem of increasing the effectiveness of the use of railroad transport equipment and its reliability transcends the limits of just the railroad industry. Successful solution of this problem in collaboration with industry will insure further scientific-technical progress in the realm of railroad transport and this will promote the development of the economics of the entire country.

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## RAILROAD

### IDLE TIME REDUCTION URGED BY NOVOSIBIRSK OFFICIAL

Moscow EKONOMICHESKAYA GAZETA in Russian No 7, Feb 81 p 16

[Article by M. Botvinkov, supervisor of the staff for combatting transport delays under the city committee of people's control, Novosibirsk: "The Effect of Preventive Measures--Maximizing the Reduction of Idle Time in Transport."]

[Text] The yearly turnover of the railroad stations of Novosibirsk exceeds 800,000 cars. Each of these is in the process of loading and unloading up to 80 percent of the time. To combat above-norm idle time an operational staff working on a voluntary service basis was set up in the city committee of people's control. It includes representatives of the committee of people's control, the Novosibirsk department of the railroad, the industrial enterprise, and the public organizations.

The creation of this staff was dictated by the need to give top priority to the preventive work and to avert instances of above-norm idle time. After all, whatever the signals, reports or information about instances of irrational use of the loading and unloading time, they only confirm a fait accompli. To prevent this we have made it a practice to set up at all the railroad stations our own posts staffed by members of the people's control groups and committees and through them we obtain operational information which is either published in the city newspaper VECHEIRNIY NOVOSIBIRSK or is promptly reviewed in a meeting of the staff. The following is from one of the publications:

Station NOVOSIBIRSK-ZAPADNIY--They have been waiting five days for the unloading of six cars with pipe which arrived for the office of material and technical supply of the Spetskomplektnftegazstroy [Special Trust for Petroleum and Gas Construction Components] (V. Bryuzgin, chief). Though the norm for unloading all these five cars is five hours and 30 minutes, they have been standing for 76 hours.

"Station Novosibirsk Vostochnyy--Held up for three days now is a carload of spare parts for the interrayon Sel'khoztekhnika [Agricultural Equipment Association]. And it is a matter of just two hours and 40 minutes."

As a rule, the reaction to such news is immediate. But if the organizations involved include an enterprise which regularly violates the time limits for the processing of railroad cars, the materials are discussed at a meeting of the staff and the enterprise managers are first of all held to account.

Last year reports from more than 100 managers of enterprises and organizations were heard at staff meetings. Five of them were assessed fines by the city committee of people's control and 17 were given administrative penalties. The rest received warnings.

But this is only part of the work of the staff. The main job is not reacting to circumstances which have already occurred but forestalling them. For this purpose we collaborate with the people's control groups and committees of the enterprises in conducting analyses in such matters as the status of the track maintenance and the possibility of improving it, the feasibility of the requisitions for cars, the provisions for mechanization of the loading operations, and the status of the railroad car inventory records. That is, we aim for elimination of the underlying causes of poor work.

All this will lead to a steady reduction in the idle times for the cars. There are numerous examples of this.

The over-all results of this work were as follows. In the first year of the work of the staff, in which it enjoyed the full support of the party organizations of the city, the total railroad car layovers were reduced an average of one hour, which resulted in a saving of 360,000 car-hours.

More than 100 enterprises are constantly addressing the problems entailed in improvement of the use of the cars. For example, in SU [Construction Administration]--37 of the Spetsstroy [Special Construction Trust] the actual layover time was reduced an average of 4.7 hours, in the railroad car depot of Novosibirsk an average of 4.5 hours, and in the mechanization administration of the Sibelevatorstroy [Siberian Elevator Construction Trust] an average of 4.7 hours.

After the intervention of the city staff and the people's control groups and posts, there was a sharp reduction in idle time; times not in excess of the norms were achieved by such enterprises as the lumber transport and woodworking combine, passenger motor transport enterprise No 4, the Novosibirsk intersectorial industrial railroad transport enterprises No 2 and No 3, the passenger transportation administration [UPTK] of the Zapsibtransstroy [West Siberian Transport Construction Trust], the reinforced concrete articles and asphalt concrete plant, the Glavneftesnab [Main Administration for the Supply of Petroleum Products] enterprises, and many others.

Now when the plan of the CPSU Central Committee and the 26th Party Congress is assigning new tasks to the people's control organs and to all of the country's public organizations, the activity of the staff has been intensified to an even greater extent.

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## RAILROAD

### BRIEFS

**ROUTE MADE SHORTER--Ufa** (TASS correspondent). The route of the freight trains traveling from Siberia and the Urals to Kazakhstan and Central Asia has been considerably shortened. This was made possible by the new railroad line connecting Ufa and Orenburg. Beginning 14 March the trains have been going not by the traditional route via station Kinel' but by a direct route which shortens the distance by nearly 600 kilometers. "Now being dispatched daily along the new railroad are dozens of trains carrying products from the petrochemical enterprises of the Urals," said I. Spatar, chief of the Bashkir section of the Kuybyshev Railroad. The new line is making it possible to significantly increase the volume of the shipments and to improve the service for the transport work of the industrial enterprises. At the end of May passenger trains will be running on the new line. They will arrive at Tashkent and other terminals of Kazakhstan and Central Asia nearly several hours faster than before. [Excerpts] [Moscow GUDOK in Russian 17 Mar 81 p 1] 7962

**NEW RAILROAD SECTOR--**The first operating train traveled through the new electrified sector between stations Irsa and Volkhovstroy, a distance of more than 64 kilometers. The collectives of construction workers from the Sevzaptransstroy [Northwest Transport Construction Trust], the Sevzapselektroset'stroy [Northwest Electrical Network Construction Trust] and the subdivisions of the power and track units of the Oktyabr' Railroad maintained a shock-work schedule and a pre-Congress labor watch here. This enabled them to turn over the project for operation ahead of schedule. In less than a year they installed on the steel line about 1,500 reinforced concrete trestles and metal structures and suspended nearly 90,000 meters of bearer and contact wire. Before very long this sector will be hooked up to the adjacent one. V. Petrov, Leningradskaya Oblast.--[Text] Moscow IZVESTIYA in Russian 7 Jan 81 p 1] 7962

**STATUS OF FUEL TRANSPORT--**From the first days of the new year many of the railroads have maintained high rates of shipment of fuel. The technical plan is being successfully fulfilled by the Moscow, L'vov and Sverdlovsk railroads. Things are going quite well with the coal basins--the Kuzbass and Ekibastuz. Substantial service in this regard is being rendered by the regulation railroads, such as the Baltic, Belorussian, Moscow, L'vov, Odessa, North Kazakhstan, Southeastern and Kuybyshev, which are successfully fulfilling the plan for delivery of empty cars. An example of well-coordinated work with the transport facilities of the oil refining enterprises is being shown by the collectives of the Oktyabr', Baltic, Moscow, North Kazakhstan, Southwestern, West Kazakhstan and Tselinna railroads. At



the same time, there has been a decline in the transport of petroleum products on the Sverdlovsk, South Ural, West Siberian, East Siberian and Krasnoyarsk railroads. There has been a reduction in the supply of empty tank cars delivered to the oil refinery plants. [Text] [Moscow GUDUK in Russian 7 Jan 81 p 1] 7962

CSO: 1829/204

## REPORTS OF TENTH FIVE-YEAR PLAN, GOALS FOR ELEVENTH

Moscow MORSKOY FLOT in Russian No 2, 1981 pp 2-7

[Article by V. Tikhonov, first deputy minister of the merchant fleet: "From Five-Year Plan to Five-Year Plan"]

[Excerpts] The maritime transport workers have labored with great enthusiasm in 1980--the last year of the 10th five-year plan. Plans and socialist commitments, undertaken in honor of the 110th anniversary of the birth of V. I. Lenin, were fulfilled, which provided not only a successful completion but also overfulfillment for a number of major indicators.

During the 10th five-year plan, the volume of freight shipments in all types of ships increased by 15.1 percent, and loading-unloading operations in ports by 11 percent. Foreign shipping grew 1.4 times, industrial production output by 34.4 percent, and profits by 33.9 percent.

During these years a large amount of freight was delivered to Magadan, Sakhalin, and Kamchatka; the fleet successfully handled the task of shipping cargo to the Arctic and other remote areas of the country which have limited navigational seasons.

In the foreign shipping area, a large amount of work was carried out on the transportation of freight to Vietnam, Cuba, and ports of the GDR, Poland, Bulgaria, Czechoslovakia, and other socialist countries. Transportation, in accordance with foreign trade contracts which the USSR has with dozens of developing and industrially developed capitalist states, has grown.

The Baltic Steamship Company, which on 13 August 1980 completed the 10th five-year plan, is rightly considered to be on the right flank of the competition in maritime transportation. During the five-year plan, according to the results of the all-union socialist competition, the collective of the steamship company was four times awarded the challenge Red Banner of Labor of the CC CPSU, the USSR Council of Ministers, AUCCTU, and Komsomol CC. The work efficiency of the steamship company's fleet grew by 31 percent during the 10th five-year plan.

The development of maritime transport in 1976-1980 was accomplished in accordance with the basic trends in the development of the national economy of the USSR, confirmed by the 25th CPSU Congress. During this period the maritime fleet grew numerically and changed qualitatively. It was increased basically with new types

of specialized, highly-productive ships. "Magnitogorsk," "Kapitan Smirnov," and "Skul'ptor Konenkov" type rollers, "Khudoshnik Sar'yan" and "Kapitan Sakharov" type container carriers carrying 700 and 400 containers respectively, "Gerol Shipki" type ferries holding 108 railroad cars, "Yulius Fuchik" type lighter carriers for 26 lighters, "Dal'triy Donskoy" type bulkers for working in the Arctic with a deadweight of 19,000 tons, produce-carrying tankers of the "Kosandara Fed'ko" class, with a deadweight of 25,000 tons, "Belorussiya" and "Georgi Ots" type passenger ships, and the powerful atomic icebreaker "Sibir'" have come into operation. A large number of auxiliary service and technical fleet ships have also appeared.

At the end of 1980 the total deadweight of the transport fleet was 18.5 million tons (including 11 million tons of dry cargo vessels and 7.5 million tons of tankers, including ore-oil carriers), i.e., it increased 21.7 percent in comparison with 1975.

More than 1.6 billion rubles were allotted to the development of a shore material and technical base. Loading complexes with a capacity of 44.5 million tons a year were put into operation in the ports, and the length of the berthing frontage was increased by 8.4 kilometers.

A ferry complex in Il'ichevsk, complexes for loading coal and wood chips in the port of Vostochnyy, container terminals in the Il'ichevsk, Leningrad, Arkhangel'sk, Magadan, Petropavlovsk, and Vostochnyy ports, berths for processing large-capacity tankers in Ventspils and Novorossiysk, and a lighter-carrier facility at the mouth of the Danube came into operation. Berths were constructed in the ports of Novorossiysk, Tuapse, Tallin, Klaypeda, Kaliningrad, Izmail, Reni, and Kerch'. In the current five-year plan basic capacities of the Slavyanskiy SRZ [ship repair yard] were introduced, shops for the production of containers at the Il'ichevsk SRZ and lighters at the Kiliya SRZ were built.

The ports were enlarged with a significant amount of loading equipment and means of mechanization, packeting, and containerization. This has permitted us to attain an over-all mechanization level of up to 93.7 percent.

In the 10th five-year plan the workers of the merchant fleet received 1,590,000 square meters of living space, and 25 pre-schools with 5,700 places, 50 dining halls seating 6,500, hospitals, clinics, dispensaries, and in-between trip rest facilities for the season were constructed; and seafaring colleges and schools were broadened.

Measures were taken to extend the navigation season through the Northern Sea Route. The solution of this task went beyond the bounds of improving and developing a maritime fleet per se and developed into a national economic problem to ensure transport to areas adjoining the navigable tracks of the Northern Sea Route.

During the years 1976-1980, a great amount of work was done to improve the control and organization of production both in the fleet and in the ports. By the beginning of the five-year plan the GKhO [state cost accounting associations], which were created in 1973, were fully formed. These bodies fully organized transportation in their own regions and directed the successful fulfillment of the 10th five-year plan. The data presented below characterize the activities of the GKhO.



(the 1980 figures are in percentages relative to 1975)

	Northwestern Fleet	Southern Fleet	Far Eastern Fleet
Profit.....	145.9	136.4	104.4
Foreign Shipping.....	151.3	144.9	100.2
Coastwise Shipping.....	120.9	86.9	120.3
Loading-Unloading Operations.....	109.0	112.5	108.2
Freight Turnover.....	120.3	113.2	101.3
Plant Production in NSO [standard processing cost].....	124.2	133.0	138.0

The decrease in coastwise trade shipping volumes for the Southern Fleet GKHO and the ministry as a whole is explained by its more efficient distribution within the transportation system.

During the five-year plan much was done to improve the control of maritime transportation by using ASU.

The first ASU section became operational in all maritime steamship companies and in 11 ports, in several of which a second section had also come into operation. Now the steamship companies and ports use computers to solve many operational management tasks of fleet and port work, and the statistical accounting and analysis of production activities. Serious steps have been taken to resolve with the help of a computer one of the basic tasks in improving operations--the elaboration of NGRF[continuous fleet work schedules], NPGRP[continuous port work planning schedules], and NPGRTU[continuous transportation center work planning schedules].

The switchover to the new system for organizing the optimum processing of ships has been practically completed through the use of NPGRTU.

On this basis systems for the coordinated activities of the transportation center enterprises have been created which are based on the experience of the Leningrad transportation center collectives approved by the CC CPSU. At the present time 36 transportation centers are working in accordance with continuous planning schedules which has permitted a decrease in ship processing time of 5-6 percent, railroad cars--7-12 percent, motor vehicles--15-20 percent.

The shipping of cargo in containers has grown 1.5 times, in packets--1.7 times, and a large number of new technological methods for trans-shipping cargo have been introduced.



**Key:**

1. Freight turnover for all types of maritime transport
2. 1980 figures are in percentages relative to 1975
3. Years

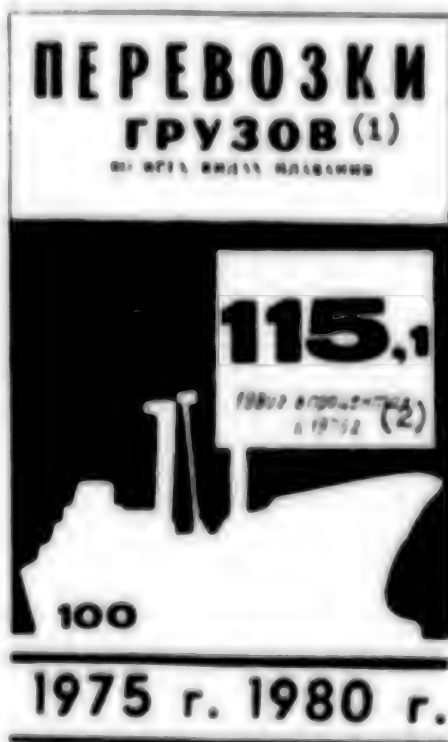
Ferry crossings in the Caspian basin and in the Far East between the ports of Vanino and Kholmsk(created in 1971) are being successfully operated in the 10th five-year plan.

Since 1978 the international ferry-crossing connecting our country with fraternal Bulgaria has been working efficiently. An international economic shipping enterprise "Interlikhter" has been organized and is successfully operating. The first section of a facility for servicing lighter carriers has been constructed at the mouth of the Danube.

The development within maritime transportation of competition for the economic expenditure of fuel and electric power has yielded tangible results. The consumption of scarce diesel fuel decreased from 23.4 percent in 1975 to 14.6 percent in 1980 thanks to the transfer of most of the transport fleet to the use of more viscous types of fuel. The tasks for 1980 and the 10th five-year plan as a whole for decreasing fuel consumption by shore enterprises and organizations have also been fulfilled. During the five-year plan the industry's enterprises saved 122 million kilowatt hours of electric power (a cut of 4.3 percent against a planned goal of 3 percent), including about 22.5 million kilowatt hours (3.9 percent) in 1980. However, the potential of maritime transport in this area has been far from exhausted, and the work on fuel and electric power savings must be continued in the 11th five-year plan.

The transfer of ships to a continuous technical maintenance system, which has forced an improvement in work organization during the mooring of ships for loading and on trips, has assisted in the more efficient utilization of the fleet. Some 230 million rubles were spent on fleet maintenance during the 10th five-year plan.

The ministry's enterprises and organizations have done much in the area of environmental protection. Equipping the ships with storage tanks and systems is being completed, and plans to construct port-trip oil and trash collectors, floating cleaning stations, bilge and fecal water collectors, and also tasks to modernize and construct nature-protection projects in the ports and at the SRZ's are being carried out. However, at the Odessa SRZ imeni 50-letiya Sovetskoy Ukrainy, the Tuapse, Rostov, and Kiliya SRZ's, and also in the ports of Odessa, Poti, and Sukhumi, the construction of these projects is lagging behind the projected plans.



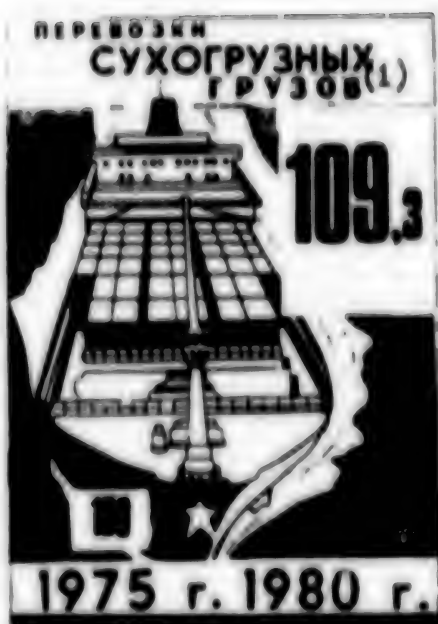
Key:

1. All types of freight shipments
2. 1980 figures are in percentages relative to 1975



Key:

1. Foreign trade
2. 1980 figures are in percentages relative to 1975



Key:

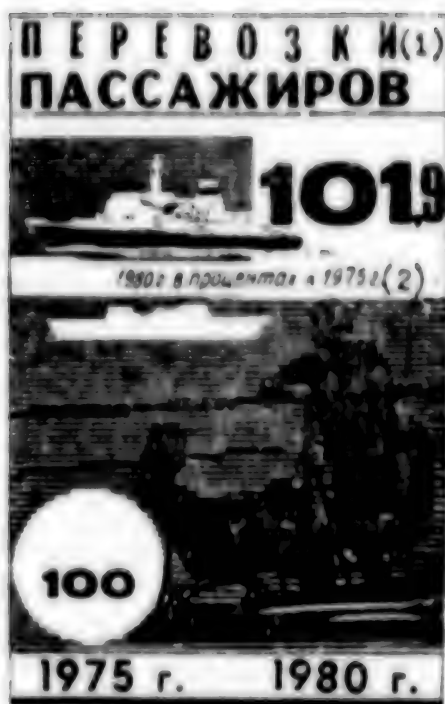
1. Dry cargo shipments

Key:

1. Liquid freight shipments
2. 1980 figures are in percentages relative to 1975

A significant amount of work has been carried out in maritime transport on saving labor resources, improving management, norm setting, and labor safety procedures during the 10th five-year plan. New, more modern staffs for transport, auxiliary service, port, icebreaker, and several other types of ships are in operation. The standard crew size has been reduced by 4,000 persons because of this. The widespread use in the fleet of the experience of the Shchekinakiy chemists has permitted a decrease in the number of personnel working on ships by 3,000 individuals.

Collective forms for managing the labor of the workers (71.5 percent of industrial production personnel are included in them) have been widely disseminated to the ministry's enterprises. Many of them distribute crew earnings by using a labor participation coefficient which reflects the specific contribution of each worker to the crew's total work results. The practice of processing ships in ports by consolidated complex crews, in which more than 81 percent of the dockers are included, has been further developed; 20.3 percent of them belong to cost accounting complex crews.



Key:

1. Passenger transportation
2. 1980 figures are in percentages relative to 1975



Key:

1. Freight shipments in containers and packages
2. 1980 figures are in percentages relative to 1975

Much has been done to create good working conditions in maritime transport. However, a number of steamship companies have not provided over-all plans for improving labor safety procedures and sanitary health measures. As the result of an insufficiently exacting attitude by steamship companies toward the contracting construction organizations, the time periods for the introduction of hospitals at Novorossiysk, Tuapse, and Slavyanka have been disrupted. Plans for the construction of sanatoria-clinics in the Far Eastern, Primorskiy, and Novorossiysk steamship companies and pioneer camps in the Novorossiysk steamship company have not been fulfilled.

Blocks of public and domestic sanitation facilities have not been built at the Kerch' and Taganrog SRZ's, and in the ports of Vanino and Petropavlovsk-Kamchatskiy.

The main attention of all of the maritime transport subunits, both at the center and locally, has been devoted to questions of the planning and influence of the economic mechanism on the normal functioning of the transportation conveyor. Measures have been carried out to improve future yearly and quarterly planning, strengthen



business contacts with the collectives of associated types of transportation and with the main clients, and organize and support the activities of the cost accounting operational groups of ships in the steamship companies. New progressive norms have been prepared and put into practice, and line shipping and commercial and financial work are being improved.

At the same time there are still large shortcomings in operational management. Thus, downtimes for the shipping fleet, including the specialized one, have increased, and the percentage of berthing time has grown. Ships in the ports of Riga, Ventspils, Klaypeda, Odessa, and Zhdanov are being processed particularly unsatisfactorily.

The fleet work schedule on the lines is often not being sustained, and freight and documents are not being prepared and the staging of ships for berthing are not always being done in a timely fashion. The GKHO's and steamship companies are still doing a poor job of controlling the effectiveness and utilization of the container fleet, are not paying proper attention to the interchange of containers among steamship companies, and also to the organization of their repair in Soviet ports.

A number of ports--Leningrad, Ventspils, Odessa, Nikolayev, Zhdanov, Nakhodka, Tallin, and several others--from month to month have not been manned with workers in accordance with the labor plan. There are also serious shortcomings in the utilization of port workers. Losses of working time because of around-the-clock and within-shift delays are great. The instability of personnel, the many disruptions of labor discipline, and infringements of the law are not being reduced.

At the present time the gross intensity indicator for processing ships in ports does not fully characterize the real situation, and consequently, a basic speed-up of loading and unloading and a decrease in unproductive ship delays are not being pushed. And even if this indicator is used, it turns out that in some large ports labor productivity has decreased and ship delays have increased. This causes great alarm. It must be clear to all that the final results of the activities of each steamship company depend mainly on the work of the ports, and the level of fleet processing organization according to continuous planning schedules and optimum systems. Work in the transportation center system is not a recurring campaign, not a passing fad, but a vital, long-term scientific and technical system for directing the operation of the entire transportation conveyor. In this connection special attention must be paid to interaction with associated types of transportation, primarily with railroads.

The problem of providing ports with personnel and their utilization is complex, but it must be solved without delay. The planned tasks for the new five-year plan, including 1981, have been significantly increased, and they can and must be fulfilled primarily through an increase in the efficiency and work quality of the transportation conveyor.

Important tasks have been set for the industry in 1981.

It must supply large amounts of cargo to the Arctic and the economic regions of the Far East and carry out a significant amount of export and import shipping as well as the export of transport services. A thorough discussion took place at the enlarged meeting of the MMF [Ministry of the Merchant Fleet] collegium and the



Key:

1. Merchant fleet tonnage
2. 1980 figures are in percentages relative to 1975

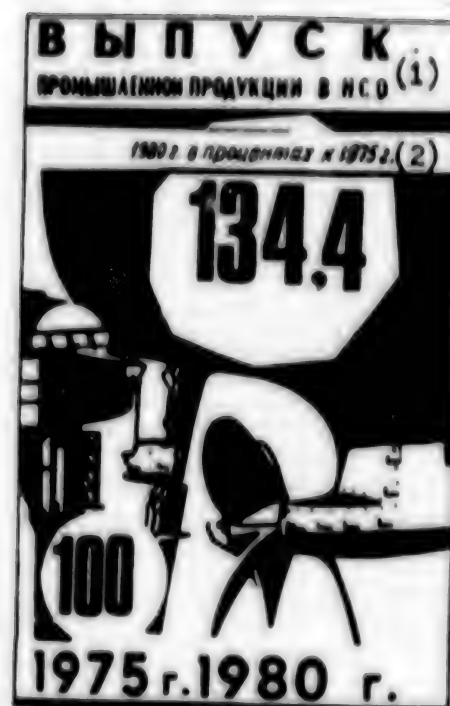


Key:

1. Profits on basic operational activities
2. 1980 figures are in percentages relative to 1975

presidium of the CC of the trade union of workers of the maritime and river fleet in December 1980 concerning the industry's tasks for 1981 in the light of the decisions of the October 1980 CC CPSU plenum, the fourth session, tenth convocation of the USSR Supreme Soviet, and the directives of comrade L. I. Brezhnev.

At the meeting decisions were made to widely discuss the CC CPSU draft for the 26th Party Congress "Basic Trends in the Economic and Social Development of the USSR in the Years 1981-1985 and for the period up to 1990," to draw up planned tasks for the 11th five-year plan aimed at achieving high final results, and to satisfy the requirements of the national economy in cargo and passenger transportation. Plans for organizational work to ensure the fulfillment and overfulfillment of the plans have been approved.



- Key: 1. Port operations: volume of loading and unloading work
2. 1980 figures are in percentages relative to 1975

- Key: 1. Industrial production output in NSO
2. 1980 figures are in percentages relative to 1975

The enlarged meeting adopted 1981 socialist commitments for the merchant shipping collective, the basic ones being measures to exceed the foreign trade shipping plan by 0.5 percent, coastwise trade by one million tons, and the transfer of cargo in ports also by one million tons. A number of crucial commitments were made on socio-economic questions.

The resolutions adopted at the meeting stated that the economic managers and trade union committees must concentrate the attention of the maritime transport workers on the full and timely fulfillment of the established plans and socialist obligations adopted in 1981, especially directing the shipment of cargo to the Arctic and the remote areas of the Far North, and the continuous carrying of exported and imported freight, including food and industrial consumer goods.





Key:

1. The Shchekinsky method in merchant shipping
2. The number of ships switching to the Shchekinsky work method during the five-year plan
3. Economic impact, in thousands of rubles

It should also improve management at all levels taking into account the increased scope of production, economic ties which are becoming increasingly complicated, and the further introduction of the latest achievements of scientific and technical progress into merchant transport.

Provisions must be made for an increase in the effectiveness and quality of work, a more intensive utilization of fixed production capital, an improvement in planning and economic work and in the analysis of financial production activities, and the wide propagandization and dissemination of the experience of the leading collectives.



Key:

1. The following have been built for the welfare of the seamen: dwellings--1,590,000 square meters, 25 pre-schools with 5,700 places, 50 dining halls seating 6,500, hospitals, between-trip rest facilities for the seamen. For the well-being of the seamen.

It is necessary to create at the enterprises and in the organizations a situation of high exactingness, to widely disclose shortcomings and the non-utilization of production reserves, to more accurately and objectively assess the work of the collectives, to conduct an uncompromising struggle against accidents and job breakdowns, the unsafe shipping and transferring of cargo, unproductive expenditures and losses that disrupt production discipline, and to decisively struggle against everything that hinders the achievement of the highest results at the lowest costs.

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## MECHANIZATION OF HARD AND LABOR-INTENSIVE OPERATIONS IN SHIPBUILDING

Leningrad SUDOSTROYENIYE in Russian No 2, Feb 81 pp 43-45

[Article by V. S. Mikhaylov, L. Ts. Adlershteyn, and V. P. Sokolov: "Mechanization of Hard and Labor-Intensive Jobs in Shipbuilding"]

[Excerpts] The ninth sectorial scientific-technical conference on mechanization of hard and labor-intensive jobs in shipbuilding was held last year in Nikolayev. The conference was organized by the Central and Black Sea interblast boards of directors of the Scientific-Technical Society imeni Academician A. N. Krylov and drew specialists from shipyards, design bureaus, scientific research institutes, and educational institutions.

I. G. Novikov, in his introductory talk, considered the current state and prospects for development of shipbuilding technology and the mechanization of labor-intensive jobs. He noted that there has been continued development of contemporary methods of building ships since the eighth sectorial conference held in 1977,<sup>1</sup> the use of mathematical methods and computers during technological preparation for production and in control of industrial processes has broadened, the level of mechanization of shipbuilding has risen, and a large number of fundamentally new technological processes have been devised and introduced.

At the plenary session reports were given on important aspects of the problem under consideration. V. V. Volostnykh presented a report on raising the efficiency of production, the quality of work, and the technical level of shipbuilding on the basis of improved planning and strengthening the influence of the economic mechanism on these indicators.

In his report V. S. Mikhaylov reviewed the basic directions of mechanization of hard and labor-intensive jobs in the 10th and 11th five-year-plans. They are: full mechanization and the transition to automation in hull building; the formation of complexes that supply large and standardized hull parts to all shipbuilding enterprises of a region; broad introduction of fully mechanized lines in assembly-welding work to make surface, bottom, and side sections (panels) with mechanized adjustment of the framing of both directions and automatic one-sided welding of the panel; development and introduction of modular methods of building ships to permit a significant share of the work to be transferred to shops; the establishment of fully mechanized lines to make pipe using pipe-bending tools

<sup>1</sup>See SUDOSTROYENIYE 1978, No 6.

with digital program control, automatic welding machines, and transportation systems; moving jobs associated with the outfitting and finishing of ship quarters to the shops by broad use of the modular system of finishing ship quarters using panels manufactured centrally at fully mechanized flow lines; setting up flow lines to make the parts and articles that fill the hull, fixtures, and ship ventilation; and, organizing fully mechanized painting sections and lines and introducing them extensively at the yard.

Successful realization of these lines of development depends significantly on improving the system of preparing for production. G. G. Berezin reported on prospects for automating this work. At the present time, an integrated system of automated technological support for shipbuilding is under development. It will shorten loft and technological preparation for production by two-thirds, reduce the labor-intensiveness of work in hull shops by 15-20 percent, and automate the cutting of metal with a 2-3 percent increase in its use coefficient.

The technological suitability of ship designs is very important for mechanizing production processes. In his report M. K. Glosman pointed out the following factors which determine the suitability of a design (level of technological suitability) for use on mechanized lines: the technological suitability of the hull shape, which is characterized by the number of surface sections; the straightness of welding gaps and joints; the technological rigor of the designs; one-sided placement of framing on surface sections; and, the possibility of using one-sided and other progressive types of welding. In addition, designs should be standardized and follow a definite succession.

The problem of reducing manual labor has both technical and organizational-methodological aspects. This was the subject of the report by P. Kh. Savitskiy. The introduction of "passports" [job description documents] for manual labor at enterprises promotes the development of steps to reduce and eliminate manual jobs. Information gathered during this process was used to formulate the plans for technical re-equipping of the sector in the 11th Five-Year Plan. V. A. Kalyagin presented a very interesting report on supplying shipbuilding production with means of mechanization in the 11th Five-Year Plan. On the basis of forecast data he established the need for technological equipment, means of mechanization, and fully mechanized flow lines and sections. The speaker pointed out the prospects for development of series production in the coming decade in terms of volume indicators and number of means of mechanization manufactured.

Improving the qualifications of managers and specialists is an essential condition for scientific-technical progress. In his discussion of this problem, G.-Yu. Ya. Leyf, representative of the Institute for Improving Worker Qualifications, related that during preparations for the introduction of new developments, including developments in the field of mechanizing production, provision must be made for a rise in the qualifications of the corresponding specialists to insure quick and efficient introduction of new developments.

N. S. Talala spoke of work in the field of the application of lasers to mark out and label sheet steel. After experimental studies with various types of lasers a continuous CO<sub>2</sub> laser with a power output of 800 watts was selected. The laser beam cuts a groove 0.05-0.1 millimeters deep and 0.6-1.0 millimeters wide on the surface of the metal. This procedure triples productivity and the strength features of the metal are no worse than where this operation is done by punching. The experimental Topaz-2,3 laser marking-labeling machine with digital programmed control has the following characteristics: dimensions of processed sheet

2,400 - 10,000 - 60 millimeters; rate of application of marking lines, up to four meters per minute; rate of labeling, 90 characters a minute; power consumption, 20 kilowatts. As Yu. A. Blagoverny reported, a technology for gas laser cutting of thin sheet steel has been developed on the basis of the Topaz-2.5 machine and makes it possible to obtain the initial data for designing a laser device with digital program control to cut out sheet steel up to five millimeters thick. Such devices offer a possibility of fully mechanizing the process of working thin sheets, raising labor productivity, and improving the sanitary-health conditions of labor.

An increase in the production of output in shipbuilding with a scarcity of labor resources demands automation of industrial processes. Automated control systems for industrial processes are efficient and promising in this respect, and the hull-building sector is best prepared for automation. In the opinion of R. A. Alilik, it would be wise to set up automated control systems for industrial processes by stages, by developing the system from group control of similar equipment to control of industrial sections, lines, and the entire production facility.

More than 25 percent of the workers in hull-building shops are employed in subsidiary jobs. The organization of these jobs is improved by introducing a rational system of supplying hull parts, but further mechanization should be accomplished by introducing automatic devices that insure performance of transportation, loading-unloading, and warehouse work and operations to record and monitor full supply of parts during the work process and collect information for operational management. Reports by A. Yu. Kharlam and B. M. Kornilov were devoted to these questions.

Ye. S. Agraferin spoke about the state and prospects for full mechanization of assembly-welding work. In the first four years of the 10th Five-Year Plan, 38 sets of equipment for mechanized lines and sections were introduced. In the 11th Five-Year Plan the volume of introduction of existing means of full mechanization of the manufacture of standard design elements will increase further, and by the end of this decade it is expected that full mechanization will be basically complete and it will be possible to begin automating assembly-welding shops. Because the loading of mechanized lines depends to a significant degree on standardization of design elements and on their technological adaptability work has been undertaken to standardize the hulls of transport, fishing, and other vessels.

The state of mechanization and automation of welding work in the manufacture of hull design elements was treated in detail by Yu. I. Simonov. By extent of application (61 percent) semiautomatic welding in carbon dioxide is the most widespread technique. The new semiautomatic Granit-3 machines are being produced for this type of welding. Assembly-welding units use automatic welding in carbon dioxide gas for making the I-bars of the framing, welding on stiffening ribs, and in other operations. One-sided automatic welding of joint seams is used chiefly to make steel panels from sheets up to 16 meters long and 4-32 millimeters thick with joints arranged in one direction. One of the most effective ways to raise labor productivity is introduction of multi-arc industrial welding processes. A four-arc welding unit (the Baltiya) and an eight-arc unit (the Volna) have been developed to weld the framing onto the panels of hull sections.

The only way to raise the efficiency of automatic flux welding is to introduce multi-arc automatic welding. But this requires solving a number of technological



questions, some of them referring to welding materials. The report by S. S. Mel'nik and V. V. Kukharensko was devoted to developing a welding flux for faster multi-arc welding. The technology and equipment for mechanized welding of surface design elements made of aluminum-magnesium alloys under flow condition production were considered in the report by V. P. Pashenichnykh and V. I. Fedorenko.

V. M. Zalkin talked on the mechanized method of compensating for welding deformation when making thin plating from aluminum-magnesium alloys on flow lines. This technique involves simultaneously pressing in the edges and rolling the welded connection along with mobile clamp-rollers that move in synchronization with the welding arc.

The report by V. S. Golovchenko and Yu. I. Simonov characterized the technology and equipment used to mechanize welding at the shipbuilding way. The level of mechanization of welding work at the way is no more than 12-15 percent, and this is achieved mainly by the use of semiautomatic welding in carbon dioxide. Automatic welding of vertical installation joints of ship hulls is being introduced to raise this figure. Specifically, the assembly-welding unit Okean has been developed. It makes it possible not only to weld sheets 8-30 millimeters thick, but at the same time to fit their edges together. The welding is done in carbon dioxide gas with a wire that is 1.2-1.4 millimeters in diameter. A method of one-sided welding with formation of the opposite side of the seam on BFK-1 backing has been developed to expand the application of mechanized methods of welding horizontal installation seams. The precision of manufacture and installation of hull design elements plays a significant part in reducing heavy manual labor at the way. In their report V. F. Sokolov and L. Ts. Adlerahteyn emphasized that the methodological basis for solving this problem is dimension-technological analysis. Its effectiveness has been confirmed in practice. N. A. Tolatova, talking on the use of the VS-2 shipbuilding way sighting device, reported on work to develop experimental models of optical laser devices, in particular the VS-4 shipbuilding way sighting unit whose measurement error in use does not exceed 1-2 millimeters.

The thermal-mechanical (combined) method is used to correct deformations in the manufacture of sections and formation of ship hulls at the way. This method combines heat with the application of a mechanical influence. V. Ya. Kurochkin reported on automation of this method of adjustment using a portable hydraulic unit. Production tests of the unit showed that one worker can correct plating up to 20 millimeters thick or framing beams whose moment of cross-sectional inertia relative to an axis perpendicular to the direction of correction does not exceed  $1,400 \text{ cm}^4$ .

N. M. Dugiyareva reported on new developments in the field of testing hull designs with compressed air. The Svalan polymer foaming agent forms stable balls of foam in places where there are leaks. An automatic sprayer called the Indikator has been built to apply this agent.

The report by A. P. Markov and L. P. Gavriluk reviewed prospects for the development of inspection work in machine installation. In their opinion, it would be wise to switch to measuring linear dimensions using light distance gauges and to coordinate ship equipment by the linear angle method using a light distance gauge combined with the telescope of a theodolite (error of no more than 0.2 millimeters per meter). Laser technology can be used to improve methods of monitoring fitment and mounting operations.

A. V. Spiridonov discussed prospects for mechanizing repair pipe production. Plans for the coming decade envision introduction of the modular unit method of arranging

equipment with sketches for 70-80 percent (by weight) of the pipe, development of new technological equipment and means of mechanization for all pipe processing operations, mechanization and full mechanization of the production processes of making pipe by introducing full mechanization of shops and sections with automation of particular operations, and development and introduction of automated systems for technological preparation for production, management of industrial processes, and management of all pipe production. The report by G. Kh. Kasimov and L. I. Yevseyev dealt with experience in the development and introduction of an organizational-technical plan for a fully mechanized pipe working shops. V. S. Yermeyev discussed new equipment for pipe working shops: a machine to cut pipe up to 89 millimeters in diameter with an SRT-1 abrasive circle, pipe-bending machines with programmed control to bend pipes with flanges, a machine to cut holes in pipes, and so on.

Communications on questions of mechanizing pipe manufacture and installation were also presented at the conference.

Improvements in the process of testing and turning over ships are accomplished on the basis of instrument simulation techniques. As F. M. Telegin observed, work in this area includes the development of economical methods and equipment for simulation testing of ship power plants with up to 22,000 kilowatts in the waters of the yard, construction of industrial stands and instruments to regulate automatic systems for non-operating mechanisms and comprehensive testing of these systems together with mechanisms on ships under construction, and development of methods of regulating and evaluating aggregate units by parameters of functioning where the modular method of installing all types of ship equipment is employed.

The jobs involved in finishing and equipping ships are labor-intensive and very diverse. V. N. Ol'shevskiy noted that the maximum increase in level of mechanization for these jobs can be achieved by introducing the modular system of outfitting and finishing internal quarters. In this case the greatest technical-economic impact is achieved where specialized, fully mechanized production facilities are organized to make the elements needed for finishing and equipping quarters.

V. A. Tkachenko discussed the M100 modular system of setting up, finishing, and equipping ship quarters. This system reduces the labor-intensity of work by an average of 35 percent.

Several other participants in the conference also presented reports on experience with the use of the modular system of finishing and outfitting ship quarters and the development and organization of production of new decorative-finishing, insulation, and mastic materials.

As P. I. Gavrish, V. A. Frizh, and N. P. Tenyayev noted in their report, the mechanization of painting work will be accomplished by using vacuum spraying of paint and lacquer. Various machines have been built in recent years for automatic application of primers under flow line conditions (the List, Profil', Gorizont, and others) and applying various paint-lacquer materials and mixtures to ship design elements (the Fakel, Luch-2, Sprut, Kal'mar, Ton, Yersh, and others).

The participants at the conference adopted recommendations on further raising the level of mechanization of production processes in ship building.

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TEST CRUISE BEFORE SHIP REPAIR WORK PROVES USEFUL

Moscow MORSKOY FLOT in Russian No 4, Apr 81 p 43

[Article: "Repair Begins at Sea"]

[Text] G. Medvedev published an article in MORSKOY FLOT (No 9, 1980) under the title "Repair Begins at Sea." This article was reviewed at the Administration of Technical Operation of the Fleet and at ship repair yards of the Ministry of the Maritime Fleet. They report that, as the author correctly observes, identifying defects in technical equipment and the hull and clarifying the scope of repair work during a pre-repair cruise helps reduce repair time and increase the operating time of ships. The example of the tanker PKHEN'YAN demonstrates the wisdom of sending representatives of the ship repair yard on pre-repair cruises to do preparatory work. This progressive form of preparing ships for repair in the yard has been reflected in documents on technical operation of the fleet and the steamship lines are employing it in their work.

The Statute on Technical Operation of the Maritime Fleet provides for representatives of steamship lines and the ship repair yard to go on pre-repair cruises and, together with the ship administration, to clarify the nature, composition, and scope of upcoming repair work and reduce the scope and time required for defect identification at the yard. The plan of measures to carry out the recommendations of the all-Union scientific-technical conference held in April 1979 under the name "Improving Technical Operation of the Fleet on the Basis of Uniform Ship Technical Services" envisions sending specialists from the ship repair yard to the ships while they are standing in port for loading operations and sending them on pre-repair cruises to clarify the scope of repair work and reduce the time needed to identify defect in technical equipment and ship hulls.

The information submitted by steamship lines to the Administration of Technical Operation of the Fleet indicates that this plan of measures is generally being carried out.

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## INVESTIGATIONS OF SAIL-ASSISTED MOTOR SHIPS

Moscow MORSKOY FLOT in Russian No 4, Apr 81 pp 41-43

[Article by Yu. Kryuchkov, V. Shostak, and V. Shcheredin: "The Sail Is Still Useful"]

[Excerpt] Water transportation is the most economical form of shipping. Therefore it is possible to ship, for example from Nikolayev to Odessa, tens of thousands of tons of various types of cargo every year: cardboard, canned fish, asphalt road building machines, anchors, small boats, wooden boxes, sugar, nuts, jute, and the like. This would release hundreds of railroad cars.

The Azov-Black Sea Basin has many ports on the seacoast and in the mouth and upper courses of major rivers that serve developed industrial regions of the country with established specializations and cooperative ties. Therefore, there is no question that coastwise shipping in this region deserves attention. The multiplicity of operations typical of coastwise shipping is a premise to be considered in developing general-purpose ships both with respect to types of cargo shipped and methods of conducting loading operations, docking, sailing regions, and the like. Sail-assisted motor ships with small deadweights are the most advisable and profitable solution to this problem.

The shipbuilders of Nikolayev have already completed three pre-drafting work-ups. One of them is a mixed river-sea cruise vessel. Research has shown that the sail-assisted motor trimaran is the best form for this ship (see Figure 1 below).

The main difficulty in building such a ship is insuring minimum dimensions with the necessary stability under sail and with a limited mast height, which is dictated by the clearances under the bridges of the Dnepr locks.

The architectural type of the ship, the trimaran, was chosen to provide the necessary stability under sail and to increase the usable area for tourists. The engine has 220 kilowatts of power to make rapid travel possible. The tourist cabins are located in the central and side hulls. All cabins are for one or two persons. The cabins in the side hulls are arranged in one tier, while in the central hull they are in two tiers: in the hull and in the superstructure. In this way, the ship holds 40 passengers.

The two-person cabins have double bunks, one above the other, that lift upward. There are life jackets and space for storage of personal belongings under the lower bunk. The top of the small table lifts up to form a wash basin. There is

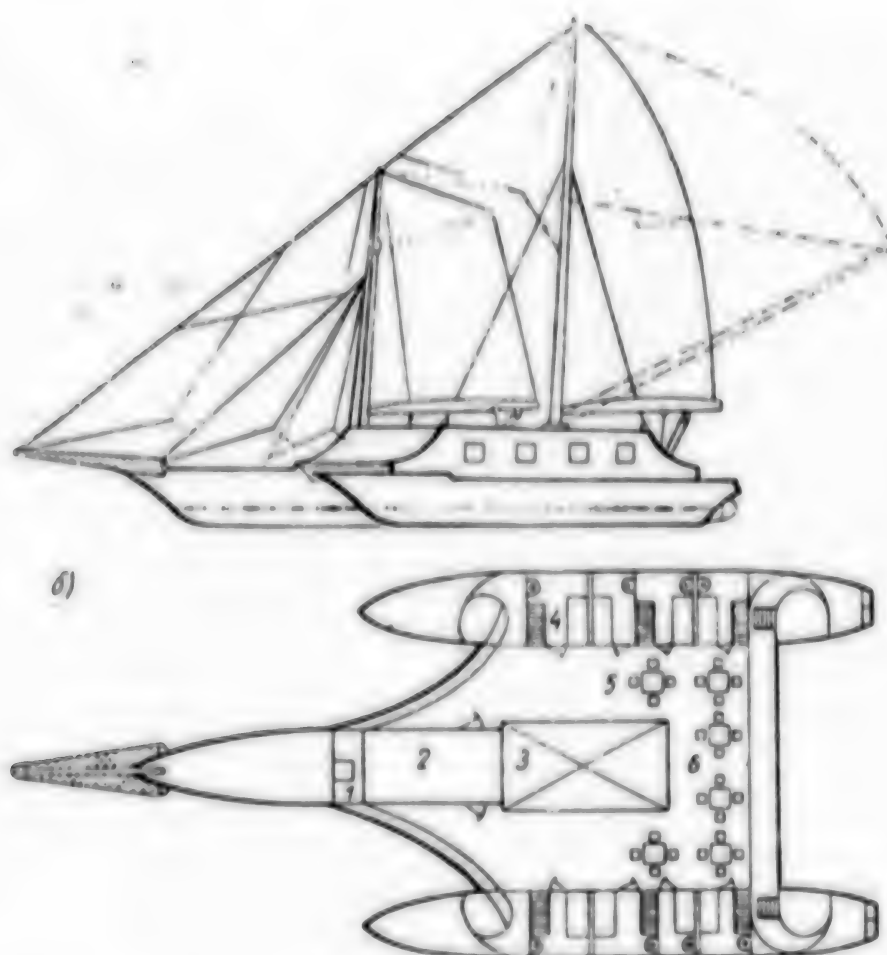


Figure 1. Sail-Assisted Mixed River-Sea Motor-Driven Cruise Ship  
(a) Side View; (b) Top View

- Key:
- (1) Navigating Bridge;
  - (2) Crew Accommodations;
  - (3) Galley and Other Service Quarters;
  - (4) Two-Person Cabins;
  - (5) Promenade Deck;
  - (6) Mess.

a clothes closet in a screened area by the entrance. Each cabin has a chair and a shelf for books and small objects. The width of the hull (2.3-2.8 meters) requires that the bunks be arranged cross-wise. The cabin is lighted by two port-holes in the sides. The cabins are designed in pairs which have a shared entrance from the deck. Each pair of cabins is separated from the other by an unbroken bulkhead. Taken together these bulkheads make the ship absolutely unsinkable when a puncture occurs and two neighboring cabins are flooded. The salons, mess, canteen, and other general-use facilities are located in the super-structure.

The vessel has a two-masted rigging set on the central hull. The foremast is 12 meters high above the water and the mainmast is 20 meters. If necessary the

mainmast can be lowered to the rear; in this case the foremast serves as a derrick crane. Additional staysails can be mounted on the shroud of the mainmast. The basic sails have an area of 120 square meters, while the full set is 250 square meters.

The shallow draft of the vessel (about one meter) enables it to approach directly to the shore at rest points and to tack under sail outside the main channel. Lateral resistance is provided by the underwater part of the three hulls. There are hand-operated winches to set and take in the sails and lower the mast. Each sail except the forenail is raised by one halyard and controlled by one sheet. Thus, it does not take a large crew to handle the rigging.

Barriers and other safety means are envisioned to protect tourists against accidental blows by the masting. If there is a danger that the ship will overturn (which is possible in principle, but unlikely), a unique emergency rescue unit is triggered and permits the ship to restore its stability by means of automatically inflating soft shells. The ship with its bowsprit is 38 meters long; its width is 16 meters.

The coastwise ship with a deadweight of about 200 tons (see Figure 2) can perform the functions of general-purpose dry-cargo ship, ro-ro ship, ferry, or tanker. It is 55 meters long and 10 meters wide with sides five meters high, a draft under load of two meters, displacement under load of 720 tons, and speed of eight knots using the engine and 6-7 knots under sail. The ship can travel 15 days without fresh supplies. It has a crew of 15 who are quartered in one- and two-person cabins in the stern superstructure. The ship can take on 15 20-foot standard containers or 25 cars. General, loose, and liquid cargoes can also be loaded on the ship.

Loading operations are done horizontally (rolling on stern ramp) and vertically (through the two hatches of the upper deck). The ship has booms with a load capacity of five tons for loading operations in ports without proper equipment. The entire space between the top deck and the shelter deck from the stern ramp to the forepeak bulkhead is designed to ship stacked and general cargo. There are two holds for loose cargo formed by lowering the tilting transverse bulkheads. There are side . . . tanks for liquid cargo.

The foremast and mainmast have gaff rigging (sail area is 200 square meters on each), while the aftermast sail has Bermudan rigging (100 square meters). Mechanization is envisioned to control the rigging. The masts may be lowered toward the stern to pass under bridges.

The auxiliary engine is a 6ChRP 25/34 diesel with a power output of 220 kilowatts and remote control. The engine and pump compartments are located in the stern under the shelter deck.

The ship's stability conforms to the Rules of the USSR Registry for Category I ships of unrestricted cruising regions; it is made unsinkable by double sides and a high double bottom over the entire length of the ship.

Studies of the use of a sailing ship of the deadweight of roughly 50,000 tons (see illustration on the fourth page of the insert [not reproduced]) were made

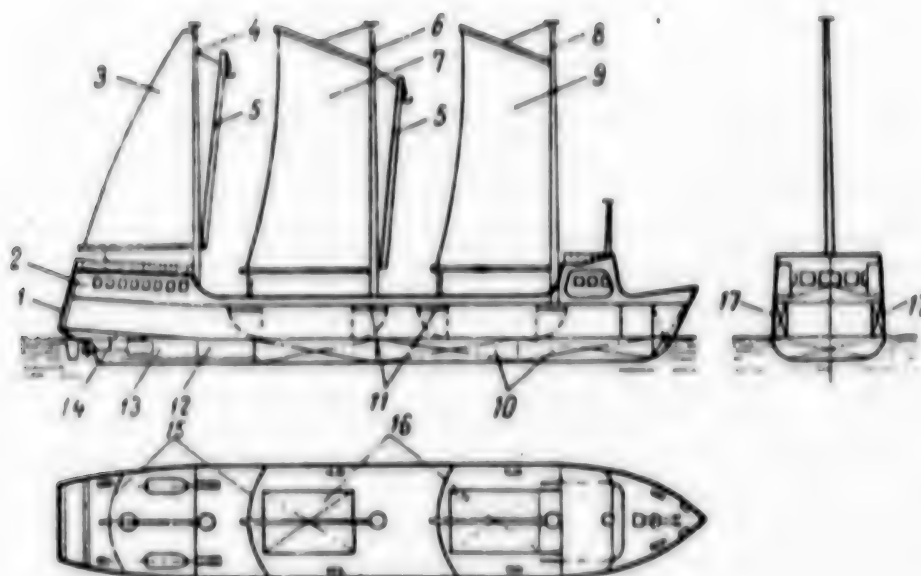


Figure 2. Sail-Assisted Motor Ship for Coastwise Use.

- |                           |                                     |
|---------------------------|-------------------------------------|
| Key: (1) Stern Ramp;      | (10) Bottom Tanks for Liquid Cargo; |
| (2) Stern Superstructure; | (11) Tilting Transverse Bulkheads;  |
| (3) After Sail;           | (12) Pump Compartment;              |
| (4) After Mast;           | (13) Engine Compartment;            |
| (5) Cargo Booms;          | (14) Deck for Stacked Cargo;        |
| (6) Mainmast;             | (15) Tracks for Sail Sheets;        |
| (7) Gaff Mainsail;        | (16) Cargo Hatches;                 |
| (8) Foremast;             | (17) Side Tanks for Liquid Cargo.   |
| (9) Gaff Foresail;        |                                     |

by converting a Zoya Kosmoden'yanskay class bulker into a sailing ship with a small auxiliary engine to compare the technical-economic indicators of a motor ship and a sailing ship. It should be noted that there are unquestionably reserves for optimizing certain technical concepts and improving the technical-economic indicators of the ship in designing a sailing ship of this deadweight.

The class of the ship should be KM • LZ A2, sailing. The maximum length of the ship is 215.4 meters, the greatest width 31.8 meters, the height of the side at midships 16.9 meters, the draft under load 12.3 meters, the deadweight 50,500 tons, fuel supply 250 tons, oil supply 40 tons, sailing time without fresh supplies 140 days, power of the main engine 4.49 megawatts, speed under engine power 11 knots, operating speed under sail 13 knots, total sail area 14,000 square meters, and crew — 40.

The rigging consists of seven cantilever masts 70 meters high. Each mast has nine permanent, shaped yards with a maximum length of 30 meters; the heavy dacron sails are arranged between them. The sails can be automatically taken into the hollow masts. The rigging is controlled and masts are turned automatically from the navigating bridge. The ship computer takes account of wind velocity, wind direction, assigned course, maximum permissible list, and various navigating



conditions and issues information on the optimal angle of setting of the masts and sail area to the actuating mechanisms. The maximum traveling speed of the ship under sail is 23-24 knots.

The ship can be loaded from specially equipped docks using port grader-type loaders; offloading is done by three belt conveyors placed along the ship. The cargo is taken from them and unloaded overboard. The design of the holds does not require cargo stowing.

The design envisions a 5DKRN62/140-3 diesel engine which is less than half as powerful as the 8DKRN74/160-3 engine. The ship's electric power plant consists of two diesel generators with capacities of 1,000 kilowatts apiece. This provides sufficient electricity for ship needs, to operate the offloading systems, and to turn the masts. Replacing the main engine with a less powerful auxiliary engine made it possible to eliminate the stern superstructure, leaving room in the stern of the ship for an aftercastle for living and domestic quarters as well as space for unloading work. A deckhouse is built in the forward part of the ship, on the tank. It holds the pilot room, the navigation-meteorological complex with the ship computer, the radio room, and the cabins of senior command personnel. This architectural decision provides the navigator of the ship with a good field of vision and insures effective use of the rigging.

Such a sailing ship can be used, for example, to ship ore from Europe to Japan and then from Australia to Europe, which is a typical route for ore ships. Furthermore, this route will basically lie in the zone of constant, stable winds along the 30th and 50th parallels from west to east. In other words, on each trip the ship will make a circumnavigational voyage near Antarctica.

Calculations show that the total operating expenditures of one sailing ship in a navigation season will be 600,000 rubles less than a motor ship. The savings comes primarily from the decrease in fuel and oil costs. A comparative technical-economic evaluation done for a hypothetical cargo flow in both directions of 500,000 tons a year showed that with the lower operating expenditures for a sailing ship, calculated expenditures for a sailing fleet or a motor fleet as a whole would be identical because of the need for a larger number of sailing vessels. This is at current domestic prices for fuel. With an increase in the price of fuel or with bunkering of overseas fuel the sailing ship becomes more efficient.

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## OCEAN AND RIVER

### OIL TRANSPORT IN VOLGA-KAMA RIVER BASIN

Moscow RECHNOY TRANSPORT in Russian No 2, Feb 81 pp 29-30

[Article by G. Gorelov, Yu. Kutavin, and V. Zalutskiy of the Central Scientific Research Institute on the Economics and Use of Water Transport.]

[Excerpts] In the past two five-year plans, oil transport by the Volgatanker shipping company's fleet has been increased systematically. For the period 1970-1980, the increase for the shipping company as a whole amounted to 25.7% in tonnage and 30.3% in cargo turnover (compared to the 1970 level). The increase was mainly due to the change-over to water transport for fuel oil, which, in 1980, was more than 50% of all petroleum transport.

At the same time, an analysis of the development of the transport of petroleum cargoes in the basin shows a trend toward a reduction in the average annual rates of growth. In the 8th Five-Year Plan, the average annual growth was 6.6%; in the 9th, it was 3.6%; and in the 10th, it was less than 1%. In this analysis, a stable growth is observed in the transport of refined petroleum products (fuel oil, diesel fuel, gasoline) and an instability in the transport of crude petroleum according to both volumes and routes. (The proportion of crude in the total volume of petroleum cargoes transported amounts to 15-20%.)

In recent years, significant changes have taken place in the distribution of the petroleum refining industry which, in their turn, are provoking changes in the interregional transport and economic communications for petroleum and petroleum products. The proportion of refining being done in the refineries (NPZ) served by the Volga-Kama basin is being reduced. In 1965, about 50% of the All-Union petroleum was refined here; in 1979, it was about 40%; and, in prospect, is an expected reduction to 30%. The interregional haulage of petroleum also is being reduced, and in the future this freight traffic will have a basically intraregional character.

The program of deepened refining of petroleum to get a greater yield of light products will receive further development. In 1980 the production of fuel oil amounted to 33.8% of the total volume of refined petroleum. In the future it is planned to drive this proportion down to 23.6%. At the NPZs served by the Volga-Kama basin, the reduction in the production of fuel oil is projected at a faster rate.

In connection with the prospective reduction in the proportion of fuel oil in fuel energy distribution, the demands for it in the individual economic regions, and for their provision with natural resources, are being changed in various degrees. The most significant reduction of demand for fuel oil is contemplated along the Volga which will increase the provision of this region with natural resources but reduce the delivery of fuel oil to other economic regions. This will have a basically negative influence on the volume of petroleum cargoes transported by the Volgatanker shipping company's fleet.

The kinds of refined petroleum also exert a substantial influence on the volumes of petroleum cargoes transported in the Volga-Kama basin. Thus, in 1979, the total volume of low-sulphur fuel oil produced at the southern plants amounted to only about 70% of that produced in 1975. This curtailed the exchange of low-sulphur and high-sulphur fuel oil between the southern part of the country and the middle part along the Volga in which the Volgatanker shipping company's fleet takes a direct part.

For increasing the role of river transport in satisfying the transport needs of the national economy and for creating conditions for its further development, there is a decree of the CC CPSU and the USSR Council of Ministers. Entitled "About Measures for the Development of River Transport in 1981-1985", it specifies the attraction of new freight traffic and the streamlining of transport arrangements for the delivery of petroleum cargoes, mainly fuel oil, to riverside thermal electric generating stations. In particular, Mineenergo USSR [the USSR Ministry of Power and Electrification] and Minneftekhimprom USSR [the USSR Ministry of the Petroleum Refining and Petrochemical Industry] are obliged to build piers and pipe lines for receiving or delivering petroleum products (in Volgodonsk, Volgograd, Volzhsk, Balakovo, Novo-Cheboksarsk, Kstovo, Perm', and Ufa). In the 11th Five-Year Plan, 8 to 11 million tons of petroleum cargoes must be switched over from the railroads to river transport, the main part of which is in the Volga-Kama Basin. So, toward the end of the Five-Year Plan, a change-over is projected of 3.5 million tons of fuel oil and 0.5 million tons of light petroleum products onto direct water transport (from Gor'kiy and Ufa) and onto combined water and rail transport (from Perm'). Taking into account the redistribution of the resources of the NPZs in the basin, the transport of fuel oil to a series of riverside TETs and GRESSs will be accomplished, not in mixed water and rail transport as at present, but in direct water service, and the total volume can grow to 1.5 million tons. It is necessary however, to establish strict control at the beginning and in the carrying out of the design and construction of the new petroleum piers because the future development of petroleum products depends in large measure on their timely completion.

Together with the change of the volume of haulage, the structure of freight traffic is being altered in a manner unfavorable for the improvement of the petroleum tanker fleet. As a result of the change-over to short range water transport of fuel oil to riverside TETs and GRESSs, and to the water transport of light petroleum products and gasoline in a northwest direction from Gor'kiy and Yaroslavl, an important national economy benefit is being provided; but the average distance of hauling cargoes is being lowered. The average annual growth rate in cargo turnover in the 11th Five-Year Plan will be lower than the freight volume growth rate by a factor of two. In addition, the number of fuel unloading points with an aver-

age daily requirement of 3000 to 4000 tons is being increased, and that complicates the organization of transport in large barge trains.

Investigations by the TsNIIIEVT [the Central Scientific Research Institute on the Economics and Use of Water Transport] and other scientific organizations indicate this; there are other fields for the development of river petroleum transport in the Volga-Kama basin. Specifically, The Institute of Comprehensive Transport Problems of Gosplan, USSR is considering a variant for the delivery of fuel oil to the Transcaucuses from the Bashkirskiy NPZs in tankers designed for mixed river and sea navigation.

Thus, the rate of development and the structural changes in petroleum refining in different economic regions, particularly along the Volga and up to the Urals, will affect not only the development of river petroleum transport in the Volga-Kama basin, but also the indicators of the utilization of the fleet of the Volgatanker shipping company.

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## OCEAN AND RIVER

### RIVER FLEET'S PROBLEMS WITH CONTAINERIZED FREIGHT

Kiev RADIANS'KA UKRAIYINA in Ukrainian 28 Apr 81 p 3

[Article by P. Velychko: "In Words - Yes! But in Deed?; Notes from a Republican National Control Committee Meeting"]

[Text] Shipment of containerized freight is becoming more extensive in transport. This progressive method provides for an increase in labor productivity, more intensive use of transport means, preservation of freight during shipment, decrease of expenditures for packing, etc.

Naturally river fleet managers can say quite a few approving words about this new type of transport. If the river people were to be judged by their words they would never be called conservative. Yet, when controllers made an analysis of container use, quite a different picture emerged. In the years of the past five-year plan, for example, the number of containers and their freight capacity increased but the extent of transport, on the contrary, decreased and did not go above one percent.

What is the problem? During last year's navigation containers remained standing in ports and docks an average of 1.8 twenty-four hour periods above norm, in other words 25,000 containers were not used. More than half of the losses were permitted by the river fleet workers.

In the Kiev, Dnepropetrovsk, Zaporozh'ye, Kherson and other ports empty and loaded containers -- those that had to be shipped by trucks, stood intermixed in parking areas. Try to find a container quickly in these conditions and load it onto a ship. Thus, during control at the Kiev river dock 30 containers addressed to Kherson stood among others -- in twenty different places.

And what a sloppy attitude towards the container park! Quite a few careless crane operators heedlessly following plans do not adhere to any technology at all. Container roofs, doors and casings are broken and no one is held responsible for it. Their routine repairs are not successful during navigation. They are simply rushed from one port to another and are "pushed onto" customers. Thus, the already restricted container park remains little used.

River fleet container repairs after navigation are also inadequately organized. Containers are thoroughly repaired only in the Kiev dock. The work is done just to get it out of the way. Soon another navigation comes up, yet more than 1,000 containers wait to be repaired in docks. There is hardly anything good to be said

about the others. Six large ports have only primitive repair facilities. But they are not equipped with workers and are not supplied with materials. In Chernigov, Cherkassy, Dneprodzerzhinsk, Novaya Kakhovka even those facilities are lacking.

Thus a good, valuable and beneficial matter is being discredited. First to bear the blame for this are the chiefs of freight-commercial work and container transport administrations of the UkSSR Holovriehflot. Therefore, the UkSSR National Control Committee issued a reprimand to its chief S.Ye. Verba. A penalty was also inflicted upon the deputy chief of the Kiev river fleet port V.P. Panchuk.

The committee pointed out the serious shortcomings in the organization of containerized freight to the chief of the Main River Fleet Administration at the UkSSR Soviet of Ministers M.O. Slaviv and also took into account a statement by the administration chiefs that they will utilize all measures possible to remove these shortcomings.

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## RENOVATION OF Leningrad SHIP REPAIR PLANT

Moscow RECHNOY TRANSPORT in Russian No 2, Feb 81 pp 32-33

[Article by N. Kalinkin of the Leningrad Ship Repair Plant]

[Excerpts] After 25 years, the size of the cargo fleet under the engineering and general maintenance of the Leningrad ship repair plant has increased by a factor of three. The power and cargo capacity of the fleet have increased many times. A large part (80%) of the ships operate in shipping beyond Soviet borders and, among them, two-thirds operate the year around in the Baltic, Black, and Mediterranean Sea basins.

The maintenance and repair of the fleet has become complicated. Because of this, the plant is being supplied with new equipment. In 1975 a new, 4.5 thousand ton ferroconcrete floating drydock, capable of receiving the largest ship of the SZRP [the Northwest River Shipping Company] was put into service.

Because of the growth in the volume of the maintenance and repair work of the fleet, the need arose for renovation of the enterprise, and such a decision was taken in 1979. The renovation design plans the construction of a 1000-meter long vertical-wall quay with gantry cranes for ship repairs. It also is planned to build, in place of the several tens of existing, aged buildings, three blocks of shops and a laboratory and administration building with a dining room. A recreation area and sport complex on plant grounds is proposed.

The time required for recovery of the capital expenditures for the construction is 6.5 years with a norm of 8.3 years. After renovation, labor productivity will increase by 30-35% with a significant improvement in working conditions. The level of mechanization is being raised. The number of large-tonnage ships assigned for engineering and general maintenance will be increased from year to year and by 1985 will grow to 120 units.

Along with normal industrial work, engineering and general maintenance, and repair of the fleet, the building of a wharf along the shoreline, the laying of distribution lines, and the construction of the No 1 block of shops are being done simultaneously.

Work in such conditions complicates the organization of the production process, but, despite this, the plan is being fulfilled successfully by plant personnel, progressive methods of labor management and new technological processes are being introduced, and the quality of work and level of servicing the fleet assigned to the plant are being raised.

The repair of ships by the method of work-crew contract was begun in 1978. As a result of the change-over to this form of labor management, the times for the repairs were substantially reduced for the motorships "Sornovskiy-12", "Aleksandr Prokof'yev", "Volga-Balt-107", "Baltiyskiy-28" and other ships. The production assignments of the work crews were fulfilled by 150-190% and the workers wages were increased by 15-20%.

At present the crews of 73 ships, by combining jobs, operate with a reduced staff of personnel. This has permitted releasing more than 200 workers from personnel afloat.

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## MISCELLANEOUS

### COORDINATION PROBLEMS AT ODESSA TRANSPORTATION CENTER HIGHLIGHTED

Kiev RABOCHAYA GAZETA in Russian 2 Apr 81 p 2

[Article by I. Medvedovskiy, editor of ODESSKIY PORTOVIK: "The Duty of Related Organizations"]

[Text] The article "Waiting in Line in the Roadstead" was published at the end of 1979 in RABOCHAYA GAZETA. The discussion in the article was that the Odessa stevedores took on development of a scientific and practical system of optimum ship and rail car handling conditions even 10 years ago in order to accelerate delivery of goods to customers with minimum expenditures. This had a significant economic effect. Nevertheless, despite the measures adopted, the main operating indicator of the port--gross intensity--began to decrease. The result is that in order for a ship to come into the dock, it must wait in line in the roadstead.

More than 2 years have passed since publication of that article. Much has changed since then. And the line in the roadstead also. No, it has not been "resolved" but has increased. Perhaps it is impossible to control this calamity? It can and must be, say the specialists. And they add: The port should have a constant reserve of carrying capacity. Although this statement may seem somewhat unexpected to someone (why, one asks, such an expensive reserve?), it is based on elementary calculations with respect to numerous lack of coordination in the activity of the large and complicated management of the port.

One of them is unsatisfactory organization of labor. To change it for the better, much is now being done: several specialized cargo complexes serviced by permanent strengthened brigades of stevedores-machine operators appeared within a short time, a production service was organized according to modern requirements, new hoisting and transport equipment was put into operation and the power available to production was increased.

Let us analyze some of these innovations. Even before April of last year, a bundle consisting of a mechanized complex for handling raw sugar, elevator docks and the grain harbor where sand for the city's construction needs was transloaded, was related to the second cargo region. Its management was located several kilometers away. This facility now belongs to the third region which is based in the immediate vicinity of the named berths.



It would seem this is trivial. But the carrying capacity of the entire complex began to increase appreciably. Ships delivering raw cane sugar from Cuba are now handled 2-3 days faster than before. The port elevator, which transloaded a strictly determined quantity of cargo for decades, increased its productivity 1.5 times. Unutilized reserves were also found here. But this is not all: a real plan has now been developed to increase the grain loads of rail cars almost three-fold. True, the support of the Ministry of Procurement and the Odessa Railroad are needed here.

Much has been done in the port collective to increase the effectiveness of the socialist competition. Preparation for the 26th CPSU Congress, which induced a tide of labor activity of workers, ITR (Engineering and technical personnel) and salaried employees, contributed to this to a significant degree. New forms of labor competition were born at the berths. One of them is the competition of stevedore brigades to achieve the highest labor productivity in handling general cargo (the most laborious for handling). The results of the competition are totaled weekly and the winners are awarded prizes and bonuses. The overall result of this is that 11 port records were established within a short time and the overall intensity of ship handling was increased. The motor ships "Aleksandr Blok," "Mtsensk" and "Belitsk," the turbine ship "Fizik Vavilov" and others departed considerably earlier than the deadline with a solid saving of anchor time.

Stevedores from the brigades of V. Zimoglyad, N. Tymun', V. Strel'ts, P. Strezhenyuk and A. Gubanov displayed samples of shock labor during the watch devoted to the 26th CPSU Congress. Many indicators that characterize the labor of the entire port collective, including above-plan profits, have been improved recently. Nevertheless, the line in the outer roadstead continues to grow.

What is wrong here? Everything is simple: ships which quantitatively exceed the 1979 fleet by a factor of 1.4 are now coming in for handling. But the port was not prepared for this jump. Can the stevedores be held to blame for this? They can. But not only them. There are objective reasons for the increasing line in the roadstead. The number of ships has become greater. Little adapted tweendeck dry cargo carriers are being used for some reason instead of bulk carriers to transport raw sugar, the amount of exceptionally labor-consuming cargo has increased and finally the planning of fleet traffic has deteriorated.

One should recall that the port is not operating as it should--it is included in the transport terminal operating on the basis of a continuous scheduled plan. That is, its weaknesses are largely the consequence of the deficiencies of allied workers. Let us take just the railroad workers. Last year 135,000 rail cars were handled on the docks and almost as many more should and could have been handled. But they were not delivered to the ports. And those that were delivered often looked like mysterious strangers: no one knew beforehand from where they would arrive, what the freight in them would be and no one could even name the numbers of the bill of lading. In short, it was impossible to plan handling of the arriving freight to ocean-going vessels.

But the necessity of transmitting such data on time is stipulated in the Regulations on the Transport Terminal, confirmed in all the pertinent agencies. But it has been confirmed only on paper. Thus, teletype communications between the railroad and port is required.

There is yet another no less important aspect. As is known, Odessa Port was born a little earlier than Odessa itself, so you can't call it a young and growing port. Quite recently, appealing to different inspectorates, the stevedores heard the answer: "It makes no sense in becoming involved in your enterprise because there is no need to expand it." Now you can no longer hear these conversations. It has become obvious that it is 5-8 times more expensive to construct new transport terminals than to modernize old ones. This truth has been proved in practice on the example of our port, which, despite its respectable growth, was always and remains one of the country's leading transport enterprises. Moreover, reconstruction of the docks of the old Karantinnyy pier begun here is going on at full speed. There is every basis to assume that the collective of the order-bearing Chernomorgidrostroy Trust, conducting these operations jointly with the operators, are putting into operation the Black Sea's largest dock much earlier than the deadline.

Modernization of all the facilities of the Odessa-Port Railroad Station will begin in the near future. It is planned to replace the tracks and electric signalling here, to lay new lines and so on. Furthermore: the stevedores are excavating an area through their own efforts for a storage area--approximately 20,000 square meters have already been excavated near the sea. This will be a reliable backup for the docks of the Karantinnyy pier.

In short, many problems are already being resolved to increase the port's carrying capacity. But is this all? Let us take the struggle to increase the dock front. It is paradoxical, but a fact: the port must literally "liberate" its own docks, artificially taken away from it in past years. This is at a time when ships with urgent cargoes stand idle for weeks in the roadstead because there is no space on the pier.

The time has long come to return that part of the storage area to the port which various services of the shipping company leased at one time and they do not plan at all to return them to the owner. Here is another aspect: we shall make no secret of the fact that there are many cloudy days in sunny Odessa. But the necessary equipment for radar piloting of ships to the docks is absent at the port and the enterprise operating round the clock. Construction of a fleet traffic control station has been drawn out unjustifiably. The crews of ships that save even minutes both when under way and at anchor during each voyage, can unexpectedly lose several hours in the home port only because fog came in from the sea.

Or take this example: the motor ship "General Karbyshev" stood idle near the dock 10 hours above the norm. Other ships lost just as much time because there are insufficient tugboats. It makes no sense to bring in a heavily laden bulk carrier or roll on-roll off ship to the outer roadstead and it makes no sense to bring in awkward guests from beyond the sea into the port. Again the lack of coordination: the transport fleet is growing like yeast while the tug fleet is remaining constant and its low capacity remains at the previous level.

"A complex misalignment," the seamen say with irony.

Oh, these are the problems of the complex. Some of them have always been obvious and constant and others occur instantaneously. For example, the railroad planned

to deliver approximately 50 rail cars with export freight to the port in February. This figure was unexpectedly doubled and continued to increase. Moreover, it was known that up to 200,000 tons of cargo waiting for ships had accumulated in the port. A bottleneck was formed as a result and the line for unloading increased even more.

The problem of coordinating the activity of transport and clientele was clearly posed at the 26th Party Congress. It is now difficult to separate the tasks and problems of the transport terminals, shippers and consignees of cargo. The Odessa stevedores, for example, became innovators in developing jointly with the Cherkass chemical workers an industrial transport complex. But at what price this was achieved! The port is transferring the wage fund for the packers over to the Production Association Azot (one may think that there is no word to settle these funds) and it is leasing forklifts which it urgently needs itself to the same Azot Association and is acquiring stop containers at its own expense. But after all the port is only a transloading base and is not obligated to answer for the quality of labor at enterprises of the chemical industry.

There is something here for USSR Gosplan and the Ministry of the Chemical Industry to think about. A common concern on the use of transport facilities is required. And all seemingly even insignificant details are important here. Let us say, 40,000-45,000 tons of imported goods come in annually to Odessa for consignees located in the Ukraine. Equipment and valuable goods lie there waiting for rail cars. But why not export everything by truck or the river fleet? It would be more advantageous and more convenient for everyone, but no one takes on itself the initiative of organizing this type of export.

Here is another detail. It is not difficult for a stevedore to dispatch a bus, trailer or overhead gangway into the hold of a ship. But it is necessary that the shipper indicate the hold-down scheme. The consignee and the stevedores suffer since the goods are forced to lie without motion, clogging the docks and warehouses.

The Kanev Administration ZagranenergostroyMontazh recently sent to Odessa a power car which was supposed to be loaded onto a motor ship. It took several weeks for this rail car to travel from Kanev to Odessa and when it arrived it turned out that there was no information at all in the documents on the technique for loading it and its escort did not have them either. Dispatches flew to the shippers. The escort's "maintenance funds" were used up and he had to leave, and the rail car stands idle. The ship departed without taking the cargo which the customer was impatiently awaiting.

Is this trivia? Unfortunately, those very problems of the transport terminals, which one must frequently listen to at the most diverse levels, consist of this trivia. As would be clear to everyone, this line in the roadstead is not economical and means losses. It means that the transport conveyor should operate clearly and efficiently. And this requires that each participant of this multiple complex remember not only his own advantage or losses but also fulfillment of his own direct duties to the related organization, that is, the statewide, public advantage.

## MISCELLANEOUS

### NEED FOR GREATER COORDINATION AT LENINGRAD TRANSPORTATION CENTER NOTED

Moscow KHOZYAYSTVO I PRAVO in Russian No 1, 1981 pp 24-30

[Article by D. Struzhentsov: "Transportation Steps Toward Unity"]

[Excerpts] The Leningrad transportation center, together with its commercial seaport, is one of the major links in our country's transportation conveyor. The port receives and processes annually up to 5,000 ships from more than 30 countries of the world. The paths and interests of all of the organizations participating in the unified transportation process meet here. It is natural therefore that the port workers have become in due course pioneers of the inter-coordinated continuous work planning of the subcontractors.

Now it is already possible to talk about the system that has been worked out for the interconnected continuous planning of the center's activities. The system is based upon coordinated planned tasks, a schedule for the movement and processing of ships, railroad cars, and motor vehicles, and standards for the production process lines and the time periods for processing rolling stock. It provides for a continuous mutual exchange of information on changes to the situation at the transportation center. A continuous work-planning schedule for the Leningrad transportation center, which is put together and coordinated among the transportation organizations ten days in advance, is the organizing document of the system. This plan reflects the time of approach of the means of transportation, the calculated or standard times for processing ships and railroad cars, indicators characterizing the work combination of various types of transportation. For example, it indicates ships whose cargo is to be immediately unloaded into railroad cars, the number of railroad cars established to provide such a transfer, etc.

The plan, as a rule, also provides for a decrease in freight storage time periods, an improvement in the use of ship freight capacity, and an increase in the loading of railroad cars and motor vehicles. Based on 10-day forecasts, 24-hour shift work plans are developed for all the associated enterprises. The work of the subcontractors is coordinated for each orientation of the technological chain. Suitable labor and material resources are allotted to each organization. The steady work rhythm of the transportation conveyor flows from here.

A coordinating group, created expressly for this purpose, directs the entire transportation center. Not only the representatives of the interested enterprises but also high-ranking managers who have the right to resolve independently subcontractor activity problems, belong to it. O. Terekhov, the chief of the Leningrad commercial port, heads the group.



The group meets weekly and makes decisions binding on all partners in this joint operation. These meetings go over all agreements connected with accomplishing the weekly planning schedule and produce a weekly analysis of the work results of the enterprises. The coordinating group has much energy, good intentions, and outstanding subject matter knowledge. The group depends upon the help of the party and soviet organs in all of its undertakings. However, this managing authority does not have any legally-set rights of its own, which greatly complicates its work. However, more will be said about these difficulties somewhat later. Now something should be said about the unquestionably progressive work at the transportation center which has a real economic impact.

Socialist competition helps very much in fulfilling and overfulfilling the continuous planning schedules of the transportation center. The coordinating group and the trade union organizations of the subcontractor enterprises have approved the conditions for the intersectorial socialist competition of the transportation center enterprise collectives. Dockers of the seaport loading areas, railroad workers of the Novyy Port and Avtovo stations, seamen of the operational ships of the Baltic Maritime Steamship Company, motor vehicle drivers of the Lenpromtrans/Lenin-grad Industrial Transportation Administration/ motor column, and river workers of the Northwestern River Steamship Company, are competing among themselves.

In preparing for a fitting welcome to the 26th CPSU Congress, the collectives of all organizations have reviewed their resources and have accepted additional socialist commitments. The result is that the transportation center enterprises have fulfilled the five-year freight turnover task by 20 November 1980, increased labor productivity by 1.5 percent above the earlier accepted commitments, and saved 655,000 kilowatt hours of electric power!

Today the transportation center and the organization of its work in accordance with a unified, continuous planning schedule is no longer a novelty. The seamen, port workers, railroad workers, motor vehicle drivers, river workers, and the many freight consignees are working in close collaboration, in single rhythm, according to a unified plan and common socialist obligations. There are many cases one may use to judge the results of such work, and the highly beneficial changes which have taken place in the organization of labor of the transport workers. The intensity of processing the fleet has grown sharply or, to put it bluntly, the time for loading ships has been decreased. For example, without any additional means the transportation center freight turnover grew by 13 percent during nine months of last year. Motor vehicle transportation downtimes decreased by five times during the five-year plan, and the idle time for each railroad car to be loaded and unloaded fell, on the average, by almost one hour. The national economy of the country received an economic impact in the millions of rubles just by the speeded-up freight delivery.

The new management of transport worker interrelationships also proved to be very attractive for each worker.

"Now every docker has a good idea of the total volume of future work," says the brigade leader of one of the best docker-machine operator crews Ye. Chernenko. "It is now truly possible to efficiently distribute our energies and to labor without crash work and breakdowns. Work according to a continuous planning schedule allows each of us to see the concrete results of our toil."



How does all of this look to an outsider? I saw how they loaded the ship "Inzhenner Machul'skiy" at the Leningrad port. There was no let-up in the work of the dockers, and there was no slowdown in rhythm. Cargo was packed into holds of the ship for an entire week at a foreign port. But here in Leningrad the crew of docker-machine operators, led by V. Vyzhletsov, unloaded the ship in four shifts. There was no fuss, no haste. The dockers worked calmly, in an organized manner. This was due primarily to the fact that the brigade leader had the opportunity to determine beforehand the strategy for processing the ship, to correctly assign units, and the subcontractors did not let them down--the cargo was unloaded directly from the holds to the railroad cars in accordance with an understanding that had been reached and in line with the schedule.

This is a good time to say that precisely because of a high organization of labor, the crew of V. Vyzhletsov at the beginning of the fourth quarter of 1980 was already working on the account for the second quarter of 1981. Many crews--participants in the transportation conveyor--are laboring in this way.

What if suddenly "an irresistible force meets an immovable object?" What if suddenly the action of the mutual assistance principle is disturbed somewhere and broken? What then? Then, let us speak directly, it will be bad. This is so because any kind of standardized documents, strictly defining the responsibility of partners and regulating their interrelationships under new conditions within the framework of the transportation center, have not been created at present. Just to begin with, the partners of the transportation conveyor are subordinate to various ministries and, to this day, there are no single generalized indicators, and therefore there are also no single economic criteria for evaluating work. Such indicators as the delivery time and freight storage time in port, and the turnover rate for means of transportation are common and self-evident. Then, take for example, an indicator such as the "statistical load on an axle"--if only the railroad workers have it, and it requires the maximum loading of railroad cars, it interests those workers involved in the transportation of heavy bulk cargo. But if the cargo is large-sized and relatively light--complex metallic structures and instruments packed in boxes, etc.--then what? Then it would seem to be unprofitable for the railroad workers, but very often this freight is the most important for the port workers. Dockers are indifferent to the "statistical load on an axle." In such a case the interests of the port workers and railroad workers, as the saying goes, are not joined. Their interests are divergent. Under present conditions these divergences of interest are offset by good relationships, or to say it another way, by a subjective factor.

If there will be no "statistical load on an axle" on the list of port work indicators, then the port workers will have the indicator "processing of a ship by the direct method." The more cargo which will be transferred immediately from a ship's hold to railroad cars, the better for the port. However, the railroad workers do not have such an indicator. Objectively speaking, it makes no difference to them where to service the railroad cars.

The railroad workers have an indicator on freight turnover without any kind of adjustments for type and purpose of freight. The station fulfilled the plan for freight turnover--honor and praise to its collective. The port workers have yet another indicator: accounting for the processing of imports. If this indicator is not fulfilled, the plan is wrecked. The railroad workers have no interest in this indicator. Because of all of the contradictions which would crop up with the different indicators, there is at present only one way out--through good relations.

It is doubtful whether one can now consider the lack of coordination in the indicators of the transportation center enterprises to be a normal phenomenon. As soon as the transportation center became universally recognized, and it had fully proven its value as a management form, then it had to have economic indicators common to all of its participants.

The scientific institutions and economic subunits of the departments were urged, in our view, to concern themselves with the development of such indicators. This business is not formalistic. A concept of accountability and mutual responsibility--material, legal, and moral--is first necessary to concretize the creation of common indicators within the framework of the transportation center. It is difficult at present to define the limits of such responsibility. In spite of the fact that the transportation center is like a united organization, each partner answers only for his specific indicators and only to the departmental managing authority, and the partners really do not have a legal responsibility to each other.

The lack of coordination in indicators is not the only trouble of the transportation center. There is also no less of a lack of coordination in the development plans of the enterprises making up the transportation center. These plans are in no way balanced and they are not coordinated among the different ministries. In recent years the economic activities of the Leningrad port have been heavily developed. Berths have been built, areas have been put into shape, and equipment has been improved. Yet the railroad business has remained just as it was a decade ago. The port, to the extent of its resources, is eliminating the disruption which has been produced. The port workers have laid railroad tracks and installed switches. However, the resources of the port are limited. The railroad intends to create a hump marshalling yard at the port only by 1983 but this was needed a long time ago. Precisely because of the lack of such a yard, the rolling stock is sometimes broken up for days. What is the joy in having new berths and warehouses if the cargo is not moved to them.

Logic demands that the ministries of those enterprises which make up the transportation center search for resources to develop a total development plan for the transportation center. Such a plan would become a standardized document, regulating the tempo of development of all the enterprises and ensuring their normal joint operation. At the present time there is no such document, and there will also not be a balanced development of the enterprises supplying this conveyor, and therefore the inevitable reductions, delays, and disruptions would result. The absence in the railroad plans of the indicator "type of rolling stock" also causes many troubles today for the transportation center workers. This often causes unsuitable railroad cars to be supplied for shipping granulated sugar. Now good understanding can prevent such cases in a timely fashion. However, why again should it be "good understanding," "fine relations?" Where are the legal bases which would eliminate even the possibility of an undesirable situation from beginning.

The importance of economic incentives for highly productive labor is great. They are widely used by the enterprises of all industries. The Leningrad transportation center is no exception. All transportation enterprises have only existed at present, as the saying goes, for themselves, and it seemed that everything was clear and understandable concerning economic incentives. But now everything has become absolutely confused. All of the participants in the transportation conveyor, although doing one common job, have retained their "departmental pockets," their bonus regulations. As the saying goes, "one has to keep an eye out for oneself."

Who must pay bonuses and for what must they be paid for the results of common work. For example, a crew of dockers unloaded a ship 24 hours ahead of the standard deadline. The steamship company in this case, because of a decrease in the ship's mooring time, earned tens of thousands of rubles. Who must pay the reward to the dockers for this fine work? If common sense is followed, then the steamship company should pay the dockers a specific percentage of the savings realized. However, the departmental principle does not allow this to be done. Thus, the savings accrue to the steamship company, but the port pays the bonuses to the dockers. Why would there not be a general transportation center bonus fund created out of deductions from each organization? Maybe a labor participation coefficient should be used to distribute it just like it is now being done in the production crews.

Should the coordinating group perhaps be given the right to cut bonuses? Of course, we should also really look over the size and procedure for using economic penalties.

The rapid rhythm of seaport life does not cease either during the day, at night, or even for a minute. The port worker and transportation worker shifts change, vessels leave and moor, one after another, shrieking their motors in a strained fashion, heavily-loaded vehicles go by, sets of railroad cars tap heavily on the rail joints. The Leningrad transportation center--one of the integral parts of the country's transportation conveyor--has completed the 10th five-year plan at a fine pace. Transportation enterprises have never before achieved such high results. Success in fulfilling the tasks of the 10th five-year plan was predetermined by the efficient interaction of the subcontractors based on work in accordance with a continuous mutually-connected planning schedule. The Leningraders are already realizing the plans of the next, 11th five-year plan, deciding at the same time the complex tasks formulated in the CC CPSU draft to the 26th Party Congress "Basic Trends in the Economic and Social Development of the USSR in the Years 1981-1985 and for the Period up to 1990." One of these tasks is to improve the coordination of all types of transportation work. It is precisely this task which forces us to admit that the transportation center has grown from the public principles which produced it.

From the editorial staff: This article by the Leningrad journalist D. Struzhentsov raises a number of very real problems which, in our view, determine not a one-time success of the activities of various transportation organizations but, in the final analysis, their continuous, efficient, and coordinated operation. We agree that the problems are sufficiently complex; however, not to the extent that their solution has been postponed for years. And it has been for years because all of these problems were widely discussed as long ago as 1978 at various meetings and seminars, in the press, including in the pages of our magazine. Thus, for example, the article "The Leningrad Transportation Center--Faces of Experience"(1978, No 8) indicated that the work of the Leningrad transportation workers makes us look more closely at legal practice. The authors, the journalists V. Raykov and A. Chursin, starting from the interrelationships of the railroad workers, seamen, river workers, and motor vehicle drivers which had been put together, had correctly reckoned that the time had come to revise some of the regulations existing in transportation today and to think a little about preparing common legal bases for transportation legislation.

There is yet another piece of material--"The Leningrad Experience--A Perfect Standardized Control"(1978, No 9), in which the chief of the legal division of the Ministry of the Maritime Fleet of the USSR G. Ivanov, specifically noted: "the study



of standardized materials, the participation in the work of the Leningrad seminar, the exchange of opinions with colleagues working in different transportation spheres--all of this allows us to confirm, first of all, that the Leningrad experiment is still going through on //semi-public beginnings// (the emphasis here and later on is ours--the editor) and secondly, that the Leningrad system is practically an information system. However, in the meanwhile, the output of information, its authenticity and timeliness, //are in no way guaranteed.//

It has been said many times at various levels that not only Leningrad, but also Odessa, Vladivostok and all the rest have needed a common standardized document for a long time, e.g., a model statute for a transportation center. However, there has been no such document up till now. We have also discussed the question many times that many norms regulating the activities of various types of transportation, to put it mildly, do not answer modern requirements. In the quoted material the chief of the legal division of the MPS/Ministry of Railways/ V. Vasil'yev emphasized, by the way, that the "plan for necessary changes and additions //was already prepared a long time ago, but the trouble is that it is being coordinated for too long a time among the interested ministries--Railways, Maritime, and River Fleet."//

It is doubtful whether these ministries should be called interested, but rather quite the reverse: more than two years ago it was said "too long a time," and the matter has not moved from dead center up till now. Why? The editorial board, of course, asks this question, which is of interest to the readers of our magazine, of the MPS, Minmorflot/Ministry of the Merchant Fleet/ USSR, Minrechflot/Ministry of the River Fleet/ RSFSR, and the motor vehicle transportation ministries of Russia and the Ukraine. At the same time let us recall that the draft of the basic trends in the economic and social development of the USSR also contains this requirement: "to carry out measures aimed at overcoming departmental separation and correctly combining the industrial and territorial administration. To improve the coordination of the activities of the central, industrial, and local control organs in the interest of effectively resolving the problems of the centers in developing the national economy."

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